REMARKS

Claims 1-14 are pending in this application.

I. Claim Rejections under 35 U.S.C. § 103(a)

Claims 1, 2, 6, and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over US 4,350,770 issued to Spraker. The Patent Owner traverses this rejection.

While conceding that the pH range of 5.5 to 8.5 (Spraker col. 9 at line 14) is merely that of the wastewater system, which is not shown to have the salt constituents as claimed, the Examiner now points to Example 1 as evidence of a pH going as low as 5.5. Nonetheless, that assessment is in error because Spraker teaches that the solution of Example 1 is a "basic salt solution" (col. 10 at line 56). Thus, the pH is above 7.0 because the pH is basic. Any assertion to the contrary is speculative and unwarranted because the solution of Example 1 is basic.

While the examiner criticizes the claims in the sense that "the functional advantage as a foliar spray is not claimed (page 2 of the Office Action 9/23/09), it is doubtful that the Examiner would find patentable weight in such functional language as that in a product claim. Moreover, no such language is needed because from "the standpoint of patent law, a compound and all of its properties are inseparable; they are one and the same thing." *In re Papesch*, 50 C.C.P.A. 1084, 1097 (C.C.P.A. 1963). This functionality is attributable to the claimed pH and need not be restated as a functional property.

As to the motivation asserted by the Examiner, it is incorrect that one in the art would "find it obvious to test to determine effective amounts." Testing under Spraker would be to determine an effective amount for a wastewater degreaser (Abstract) operating by *Bacillus* or *Pseudomonas* microbial action (col. 2 at lines 25 to 58). This has nothing to do with fungicidal effects of a foliar spray, which constitutes the intended use of the composition as claimed. The "basic" solution of Spraker's Example 1 is unsuited for this use and is suitably basic for the reason that it is intended to enhance degreasing action. Nothing in the art of record teaches or suggests that effective amounts may be found for the use that is presently claimed.

For the reasons outlined above, the Undersigned respectfully submits that the rejection should be withdrawn because Spraker does not teach a salt solution having a pH

as claimed and because there is no motivation to modify the solution of Spraker as asserted by the Examiner.

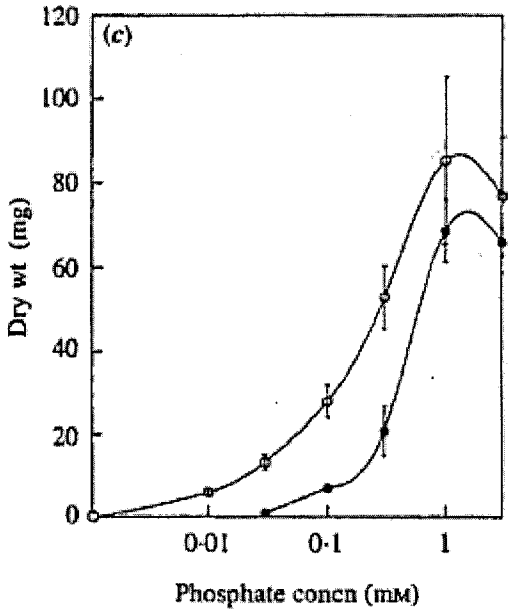
Claims 1, 6 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Barlet 5,070,083, Ducret et al. 4,139,616, Horriere et al. 5,169,646, Lovett 5,514,200, Vetanovetz et al. 5,390,418 and Smile et al. '89. The Examiner applies Barlet, Ducret and Horrierre to show use of phosphonate salts "as art recognized fungicides," while applying Lovatt and Vetanovitz to show the use of phosphates as "art recognized fertilizers." Smilie at page 924 is said to show the effectiveness of phosphite salts enhanced with phosphates.

Applicant respectfully traverses this rejection for the reason that it misapplies Smilie. Smilie at 924 does not show the effectiveness of phosphite salts enhanced with phosphates, rather, it shows just the opposite, i.e.:

> Our results also show that the effectiveness of phosphite in providing protection may be influenced by the concentration of phosphate present. The coincident increase in phosphate and breakdown of protection [emphasis added] in tobacco (Figs. 6 and 7) suggests, though does not prove, that the two events are related. If the increased phosphate concentrations reduced the uptake of phosphite into the fungus, breakdown of protection could be expected. We have shown that this is precisely what happens *to P. palmivora* under *in vitro* conditions (J.M. Griffith personal communication). Phosphite entry into *P. palmovora* is directly reduced in the presence of phosphate. There appears to be common transport systems for phosphate and phosphite uptake, and mutually competitive inhibition is exhibited between the two types of anion [emphasis added]. Phosphate has also been shown to inhibit phosphite uptake in *P. citrophthora*, and it was suggested that in this species there might also be two different uptake systems having different affinities for phosphite. The irregular preinfection count of downy mildew by phosphite . . .may be explained by inhibition of phosphite in the fungus in the presence of high phosphate.

Smilie at 924

Thus, Smilie is merely cumulative to Griffith (see mention of a personal note from Griffith in the text above), which Applicant argued in the response of June 3 2008. To repeat these arguments in summary form, J. M. Griffith, M.D. Coffey, and B.R. Grant 1993, "Phosphonate inhibition as a function of phosphate concentration in isolates of *Phytophthora palmivora*," J. OF GENERAL MICROBIOL., 139: 2109-2116 shows work on this same *P. palmivora* organism. Fig. 3 of Griffith shows that the relative inhibition effect which is caused by combining phosphonate with phosphate diminishes towards 1 mM. Fig. 1(c) is replicated below:



The above figure shows that phosphate content above 1 mM inhibits phosphonate uptake. The overall trend as to the diminishing inhibition effect with increasing phosphate content is true with respect to all isolates in the Griffin study, which states on page 2113 that the upper limits for the observed effect were in the range of from 1 mM to 3 mM:

> However, when Pie (phosphate content in the media) did not limit growth, at 1 mM and 3 mM, the P376 and P7228 strains accumulated more Pi (internal phosphate content in the cells) . . . than P113)

Other work by Griffith shows that the metabolic interaction is more complex than one might otherwise imagine. The following Table is copied from J.M Griffith, R. H. Smillie, J.O. Niere and B. R. Grant, 1989 Effect of phosphate on the toxicity of phosphonate *in Phytophthora palmivora*, ARCH. MICROBIOL 152:425-429.

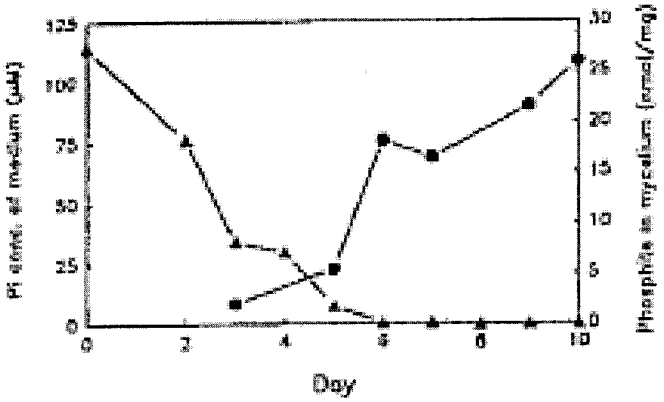


Fig. 1. The uptake of phosphite and the utilization of P_i by *Phytophthora palmivora* during growth in LPR medium containing 1 mM phosphite. P_i and phosphite concentrations were determined by ion chromatography as described in Methods. P_i in medium (▲——▲); phosphite in mycelium (●——●)

Griffith explains the significance of Fig. 1:

> Analysis of the phosphite [phosphonate] content of the mycellium grown in LPR medium in the presence of 1 mM phosphite (the concentration used by Fenn and Coffey in 1984) showed that there was an abrupt increase in the level of phosphite entering the mycellium after Pi [phosphate] had been depleted from the medium at day 6 (Fig. 1).

This is shown above in Fig. 1 where the curve on the left hand side represents diminishing phosphate content in the growth medium, and the curve on the right hand side represents phosphonate that has entered the fungal cells of *P. palmivora*. At these concentrations, the phosphonate does not start to work until the phosphate is depleted. This explains, for example, why "[p]hosphates have also been considered to be a competitive inhibitor for phosphonate assimilation, thus inhibiting the ability of phosphonates to protect against fungus attack." U.S. 5,997,910, col. lines 57-60. At present, this evidence weighs strongly in favor of nonobviousness because the art shows generally that phosphates should not be mixed with phosphonates to achieve an antifungal effect.

Smilie does observe on page 924 that other researchers have reported an opposite effect, i.e.; one where "a different strain of *P. palmivora*, which was extremely sensitive to phosphite *in vitro*, responded in the opposite way to that observed in our study, with

phosphate enhancing the effectiveness of phosphite." Smilie then recognizes that the methods used by the other researchers "do not allow direct comparison; with the work described here." Smilie explains this opposite effect as one attributable to a particularly sensitive strain of *P. palmivora*.

Thus, the great weight of evidence available in the art shows that the competitive uptake phenomenon was known at the time of the present invention. This phenomenon taught away from the claimed use of phosphite in combination with phosphate because phosphate inhibits the uptake of phosphite. Thus, the phycomycete organism (exemplified by *P. palmivora*) targeted by phosphonate would go largely unaffected due to phosphate inhibiting the uptake of phosphonate. This would be akin to mixing poison with a poison antidote. The expectation was that a majority of phosphite applied in combination with phosphate would likely be wasted because the pathogens at issue in the intended environment of use selectively uptake phosphate to the exclusion of phosphite whenever phosphate is present. The prior art strongly suggests that the application of phosphonate in combination with phosphate would not hit the intended target.

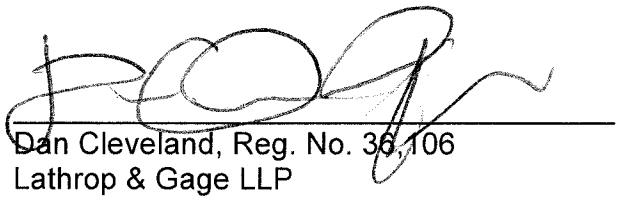
The Examiner will further appreciate that the claimed effective amounts of each salt ranging from 0.25% to 5% vol/vol approximate 20 mM at the lower end of the range, as compared to the demonstrated plateau from 1 to 3 mM in the prior art. See US 5,997,910 col. 3 at lines 50-56. The art of record does not report having studied phosphonate in combination with phosphate at the significantly higher concentrations that are claimed. See US 5,997,910 in col. 2 at lines 31-66 for a summary of the problems known to the art at the time of the invention. What is claimed is patentable because it solves the problems by acting in a manner that is opposite the presumed effect projected from prior art studies at much lower concentrations.

II. Double Patenting

As the nature of the double patenting rejection is provisional in nature and this prosecution has not yet concluded, the Patent Owner will consider the claims at the time when the Examiner indicates allowability, in order to ascertain whether the imposition of this rejection is warranted at that time. Applicant will provide a terminal disclaimer, if warranted at that time. Accordingly, the Undersigned requests the favor of an *Ex Parte Quayle* action affording an opportunity to make a terminal disclaimer and to provide a suitable Reissue Oath accompanying any indication of allowable claims.

For the foregoing reasons, Applicant's attorney respectfully submits that the claims are worthy of allowance. Applicant believes no additional fees other than the RCE and 3-month extension of time are due, however, if any additional fee is deemed necessary in connection with this Response, please charge Deposit Account No. 12–0600.

Respectfully submitted,



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